

EXHIBIT 13



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2181 Identifying and Interpreting a 35 U.S.C. 112(f) or Pre-AIA 35 U.S.C. 112, Sixth Paragraph Limitation [R-10.2019]

This section sets forth guidelines for the examination of [35 U.S.C. 112\(f\)](#) or [pre-AIA 35 U.S.C. 112](#), sixth paragraph, "means or step plus function" limitations in a claim. Throughout this section, reference is made to [35 U.S.C. 112\(f\)](#), however the guidance is equally applicable to [pre-AIA 35 U.S.C. 112](#), sixth paragraph.

The Court of Appeals for the Federal Circuit, in its *en banc* decision *In re Donaldson Co.*, 16 F.3d 1189, 1194, 29 USPQ2d 1845, 1850 (Fed. Cir. 1994), stated:

Per our holding, the "broadest reasonable interpretation" that an examiner may give means-plus-function language is that statutorily mandated in paragraph six. Accordingly, the PTO may not disregard the structure disclosed in the specification corresponding to such language when rendering a patentability determination.

In *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015) the court stated:

[t]he standard is whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure.

Therefore, the broadest reasonable interpretation of a claim limitation that invokes [35 U.S.C. 112\(f\)](#) is the structure, material or act described in the specification as performing the entire claimed function and equivalents to the disclosed structure, material or act. As a result, [section 112\(f\)](#) limitations will, in some cases, be afforded a more narrow interpretation than a limitation that is not crafted in "means plus function" format.

I. DETERMINING WHETHER A CLAIM LIMITATION INVOKES 35 U.S.C. 112(f) or PRE-AIA 35 U.S.C. 112, SIXTH PARAGRAPH

The USPTO must apply [35 U.S.C. 112\(f\)](#) in appropriate cases, and give claims their broadest reasonable interpretation (BRI), in light of and consistent with the written description of the invention in the application. In determining the BRI, examiners should establish the meaning of each claim term consistent with the specification as it would be interpreted by one of ordinary skill in the art, including identifying and construing functional claim limitations. If a claim limitation recites a term and associated functional language, the examiner should determine whether the claim limitation invokes [35 U.S.C. 112\(f\)](#). Application of [35 U.S.C. 112\(f\)](#) is driven by the claim language, not by applicant's intent or mere statements to the contrary included in the specification or made during prosecution. See *In re Donaldson Co.*, 16 F.3d at 1194, 29 USPQ2d at 1850 (stating that [35 U.S.C. 112](#), sixth paragraph "merely sets a limit on how broadly the PTO may construe means-plus-function language under the rubric of reasonable interpretation"). The Federal Circuit has held that applicants (and reexamination patentees) before the USPTO have the opportunity and the obligation to define their inventions precisely during proceedings before the USPTO. See *In re Morris*, 127 F.3d 1048, 1056–57, 44 USPQ2d 1023, 1029–30 (Fed. Cir. 1997) ([35 U.S.C. 112](#), second paragraph places the burden of precise claim drafting on the applicant); *In re Zletz*, 893 F.2d 319, 322, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) (manner of claim interpretation that is used by courts in litigation is not the manner of claim interpretation that is applicable during prosecution of a pending application before the USPTO); *Sage Prods., Inc. v. Devon Indus., Inc.*, 126 F.3d 1420, 1425, 44 USPQ2d 1103, 1107 (Fed. Cir. 1997) (patentee who had a clear opportunity to negotiate broader claims during prosecution but did not do so, may not seek to expand the claims through the doctrine of equivalents, for it is the patentee, not the public, who must bear the cost of failure to seek protection for this foreseeable alteration of its claimed structure).

A claim limitation is presumed to invoke [35 U.S.C. 112\(f\)](#) when it explicitly uses the term "means" or "step" and includes functional language. The presumption that [35 U.S.C. 112\(f\)](#) applies is overcome when the limitation further includes the structure, material or acts necessary to perform the recited function. See *TriMed, Inc. v. Stryker Corp.*, 514 F.3d 1256, 1259–60, 85 USPQ2d 1787, 1789 (Fed. Cir. 2008) ("Sufficient structure exists when the claim language specifies the exact structure that performs the function in question without need to resort to other portions of the specification or extrinsic evidence for an adequate understanding of the structure."); see also *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1376, 65 USPQ2d 1865, 1874 (Fed. Cir. 2003).

By contrast, a claim limitation that does not use the term "means" or "step" will trigger the rebuttable presumption that [35 U.S.C. 112\(f\)](#) does not apply. See, e.g., *Phillips v. AWH Corp.*, 415 F.3d 1303, 1310, 75 USPQ2d 1321, 1324 (Fed. Cir. 2005) (*en banc*); *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1369, 62 USPQ2d 1658, 1664 (Fed. Cir. 2002); *Personalized Media Commc'ns, LLC v. ITC*, 161 F.3d 696, 703–04, 48 USPQ2d 1880, 1886–87 (Fed. Cir. 1998). Even in the face of this presumption, the examiner should nonetheless consider whether the presumption is overcome. The presumption that [35 U.S.C. 112\(f\)](#) does not apply to a claim limitation that does not use the term "means" is overcome when "the claim term fails to 'recite sufficiently definite structure' or else recites 'function without reciting sufficient structure for performing that function.'" *Williamson*, 792 F.3d at 1349, 115 USPQ2d at 1111 (Fed. Cir. 2015) (*en banc*) (quoting *Watts v. XL Systems*,

<ul style="list-style-type: none"> 2106.07-Formulating and Supporting Rejections For Lack Of Subject Matter Eligibility 2106.07(a)-Formulating a Rejection For Lack of Subject Matter Eligibility 2106.07(a)(1)-Form Paragraphs for use in Lack of Subject Matter Eligibility Rejections 2106.07(b)-Evaluating Applicant's Response 2106.07(c)-Clarifying the Record 	<p><i>Inc.</i>, 232 F.3d 877, 880 (Fed. Cir. 2000); see also <i>Personalized Media Communications, LLC v. International Trade Commission</i>, 161 F. 3d 696, 704 (Fed. Cir. 1998).</p> <p>Instead of using "means" in such cases, a substitute term acts as a generic placeholder for the term "means" and would not be recognized by one of ordinary skill in the art as being sufficiently definite structure for performing the claimed function. "The standard is whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure." <i>Williamson</i>, 792 F.3d at 1349, 115 USPQ2d at 1111; see also <i>Greenberg v. Ethicon Endo-Surgery, Inc.</i>, 91 F.3d 1580, 1583, 39 USPQ2d 1783, 1786 (Fed. Cir. 1996).</p> <p>Accordingly, examiners will apply 35 U.S.C. 112(f) to a claim limitation if it meets the following 3-prong analysis:</p> <p>(A) the claim limitation uses the term "means" or "step" or a term used as a substitute for "means" that is a generic placeholder (also called a nonce term or a non-structural term having no specific structural meaning) for performing the claimed function;</p> <p>(B) the term "means" or "step" or the generic placeholder is modified by functional language, typically, but not always linked by the transition word "for" (e.g., "means for") or another linking word or phrase, such as "configured to" or "so that"; and</p> <p>(C) the term "means" or "step" or the generic placeholder is not modified by sufficient structure, material, or acts for performing the claimed function.</p> <p>A determination that a claim is being interpreted according to 35 U.S.C. 112(f) should be expressly stated in the examiner's Office action. If a claim limitation uses the term "means" or "step," but the examiner determines that either the second prong or the third prong of the 3-prong analysis is not met, then in these situations, the examiner must include a statement in the Office action explaining the reasons why a claim limitation which uses the term "means" or "step" is not being treated under 35 U.S.C. 112(f).</p> <p>In response to the Office action that finds that 35 U.S.C. 112(f) is invoked, if applicant does not want to have the claim limitation interpreted under 35 U.S.C. 112(f), applicant may: (1) present a sufficient showing to establish that the claim limitation recites sufficient structure to perform the claimed function so as to avoid interpretation under 35 U.S.C. 112(f); or (2) amend the claim limitation in a way that avoids interpretation under 35 U.S.C. 112(f) (e.g., by reciting sufficient structure to perform the claimed function).</p> <p>In the event that it is unclear whether the claim limitation falls within the scope of 35 U.S.C. 112(f), a rejection under 35 U.S.C. 112(b) may be appropriate.</p> <p><i>A. The Claim Limitation Uses the Term "Means" or "Step" or a Generic Placeholder (A Term That Is Simply A Substitute for "Means")</i></p> <p>With respect to the first prong of this analysis, a claim element that does not include the term "means" or "step" triggers a rebuttable presumption that 35 U.S.C. 112(f) does not apply. When the claim limitation does not use the term "means," examiners should determine whether the presumption that 35 U.S.C. 112(f) does not apply is overcome. The presumption may be overcome if the claim limitation uses a generic placeholder (a term that is simply a substitute for the term "means"). The following is a list of non-structural generic placeholders that may invoke 35 U.S.C. 112(f): "mechanism for," "module for," "device for," "unit for," "component for," "element for," "member for," "apparatus for," "machine for," or "system for." <i>Welker Bearing Co., v. PHD, Inc.</i>, 550 F.3d 1090, 1096, 89 USPQ2d 1289, 1293-94 (Fed. Cir. 2008); <i>Mass. Inst. of Tech. v. Abacus Software</i>, 462 F.3d 1344, 1354, 80 USPQ2d 1225, 1228 (Fed. Cir. 2006); <i>Personalized Media</i>, 161 F.3d at 704, 48 USPQ2d at 1886-87; <i>Mas-Hamilton Group v. LaGard, Inc.</i>, 156 F.3d 1206, 1214-1215, 48 USPQ2d 1010, 1017 (Fed. Cir. 1998). Note that there is no fixed list of generic placeholders that always result in 35 U.S.C. 112(f) interpretation, and likewise there is no fixed list of words that always avoid 35 U.S.C. 112(f) interpretation. Every case will turn on its own unique set of facts.</p> <p>The standard is whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure." <i>Williamson v. Citrix Online, LLC</i>, 792 F.3d 1339, 1349, 115 USPQ2d 1105, 1111 (Fed. Cir. 2015). The issue in <i>Williamson</i> was whether a "distributed learning control module" limitation in claims directed to a distributed learning system should be interpreted as a means-plus-function limitation. See <i>Williamson</i>, 792 F.3d at 1347. The Federal Circuit concluded that "the 'distributed learning control module' limitation fails to recite sufficiently definite structure and that the presumption against means-plus function claiming is rebutted." <i>Id.</i> at 1351. In support, the Federal Circuit determined that "the word 'module' does not provide any indication of structure because it sets forth the same black box recitation of structure for providing the same specified function as if the term 'means' had been used." <i>Id.</i> at 1350-51.</p> <p>If persons of ordinary skill in the art reading the specification understand the term to have a sufficiently definite meaning as the name for the structure that performs the function, even when the term covers a broad class of structures or identifies the structures by their function (e.g., "filters," "brakes," "clamp," "screwdriver," and "locks") 35 U.S.C. 112(f) will not apply. <i>Apex Inc. v. Raritan Computer, Inc.</i>, 325 F.3d 1364, 1372-73, 66 USPQ2d 1444, 1451-52 (Fed. Cir. 2003); <i>CCS Fitness</i>, 288 F.3d at 1369, 62 USPQ2d at 1664; <i>Watts v. XL Sys. Inc.</i>, 232 F.3d 877, 880-81, 56 USPQ2d 1836, 1839 (Fed. Cir. 2000); <i>Personalized Media</i>, 161 F.3d at 704, 48 USPQ2d at 1888; <i>Greenberg v. Ethicon Endo-Surgery, Inc.</i>, 91 F.3d 1580, 1583, 39 USPQ2d 1783, 1786 (Fed. Cir. 1996) ("Many devices take their names from the functions they perform.")</p> <p>The term is not required to denote a specific structure or a precise physical structure to avoid the application of 35 U.S.C. 112(f). See <i>Watts</i>, 232 F.3d at 880, 56 USPQ2d at 1838; <i>Inventio AG v. Thyssenkrupp Elevator Americas Corp.</i>, 649 F.3d 1350, 99 USPQ2d 1112 (Fed. Cir. 2011) (holding that the claim terms "modernizing device" and "computing unit" when read in light of the specification connoted sufficient, definite structure to one of skill in the art to preclude application of 35 U.S.C. 112, sixth paragraph). The following are examples of structural terms that have been found not to invoke 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, paragraph 6: "circuit," "detent mechanism," "digital detector," "reciprocating member," "connector assembly," "perforation," "sealingly connected joints," and "eyeglass hanger member." See <i>Mass. Inst. of Tech.</i>, 462 F.3d at 1355-1356, 80 USPQ2d at 1332 (the court found the recitation of "aesthetic correction circuitry" sufficient to avoid pre-AIA 35 U.S.C. 112, paragraph 6, treatment because the term circuit, combined with a description of the function of the circuit, connoted sufficient structure to one of ordinary skill in the art.); <i>Linear Tech. Corp. v. Impala Linear Corp.</i>, 379 F.3d 1311, 1321, 72 USPQ2d 1065, 1071 (Fed. Cir. 2004); <i>Apex</i>, 325 F.3d at 1373, 66 USPQ2d at 1452; <i>Greenberg</i>, 91 F.3d at 1583-84, 39 USPQ2d at 1786; <i>Personalized Media</i>, 161 F.3d at 704-05, 39 USPQ2d at 1786; <i>CCS Fitness</i>, 288 F.3d at 1369-70, 62 USPQ2d at 1664-65; <i>Cole v. Kimberly-Clark Corp.</i>, 102 F.3d 524, 531 (Fed. Cir. 1996);</p>
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2121.01-Use of Prior Art in Rejections Where Operability is in Question	<i>Watts</i> , 232 F.3d at 881, 56 USPQ2d at 1839; <i>Al-Site Corp. v. VSI Int'l, Inc.</i> , 174 F.3d 1308, 1318-19, 50 USPQ2d 1161, 1166-67 (Fed. Cir. 1999).
<ul style="list-style-type: none"> 2121.02-Compounds and Compositions — What Constitutes Enabling Prior Art 2121.03-Plant Genetics — What Constitutes Enabling Prior Art 2121.04-Apparatus and Articles — What Constitutes Enabling Prior Art 	For a term to be considered a substitute for "means," and lack sufficient structure for performing the function, it must serve as a generic placeholder and thus not limit the scope of the claim to any specific manner or structure for performing the claimed function. It is important to remember that there are no absolutes in the determination of terms used as a substitute for "means" that serve as generic placeholders. The examiner must carefully consider the term in light of the specification and the commonly accepted meaning in the technological art. Every application will turn on its own facts.
2122-Discussion of Utility in the Prior Art	If the examiner has not interpreted a claim limitation as invoking 35 U.S.C. 112(f) and an applicant wishes to have the claim limitation treated under 35 U.S.C. 112(f) applicant must either: (A) amend the claim to include the phrase "means" or "step"; or (B) rebut the presumption that 35 U.S.C. 112(f) does not apply by showing that the claim limitation is written as a function to be performed and does not recite sufficient structure, material, or acts to perform that function. See <i>Watts</i> , 232 F.3d at 881, 56 USPQ2d at 1839 (Fed. Cir. 2000) (Claim limitations were held not to invoke 35 U.S.C. 112 , sixth paragraph, because the absence of the term "means" raised the presumption that the limitations were not in means-plus-function form and the applicant did not rebut that presumption.); see also <i>Masco Corp. v. United States</i> , 303 F.3d 1316, 1327, 64 USPQ2d 1182, 1189 (Fed. Cir. 2002) ("[W]here a method claim does not contain the term 'step[s] for,' a limitation of that claim cannot be construed as a step-plus-function limitation without a showing that the limitation contains no act.").
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<ul style="list-style-type: none"> 2126.01-Date of Availability of a Patent as a Reference 2126.02-Scope of Reference's Disclosure Which Can Be Used to Reject Claims When the Reference Is a "Patent" but Not a "Publication" 	Some of the following examples illustrate situations where the term "means" or "step" was not used but either the Board or courts nevertheless determined that the claim limitation fell within the scope of 35 U.S.C. 112(f) . Note that the examples are fact specific and should not be applied as <i>per se</i> rules. See <i>Signtech USA, Ltd. v. Vutek, Inc.</i> , 174 F.3d 1352, 1356, 50 USPQ2d 1372, 1374-75 (Fed. Cir. 1999) ("ink delivery means positioned on ..." invokes 35 U.S.C. 112 , sixth paragraph since the phrase "ink delivery means" is equivalent to "means for ink delivery"); <i>Seal-Flex, Inc. v. Athletic Track and Court Construction</i> , 172 F.3d 836, 850, 50 USPQ2d 1225, 1234 (Fed. Cir. 1999) (Rader, J., concurring) ("Claim elements without express step-plus-function language may nevertheless fall within Section 112 , Para. 6 if they merely claim the underlying function without recitation of acts for performing that function.... In general terms, the 'underlying function' of a method claim element corresponds to <i>what</i> that element ultimately accomplishes in relationship to what the other elements of the claim and the claim as a whole accomplish. 'Acts,' on the other hand, correspond to <i>how</i> the function is accomplished.... If the claim element uses the phrase 'step for,' then Section 112 , Para. 6 is presumed to apply.... On the other hand, the term 'step' alone and the phrase 'steps of' tend to show that Section 112 , Para. 6 does not govern that limitation."); <i>Personalized Media</i> , 161 F.3d at 703-04, 48 USPQ2d at 1886-87 (Fed. Cir. 1998); <i>Mas-Hamilton</i> , 156 F.3d at 1213, 48 USPQ2d at 1016 (Fed. Cir. 1998) ("lever moving element for moving the lever" and "movable link member for holding the lever...and for releasing the lever" were construed as means-plus-function limitations invoking 35 U.S.C. 112 , sixth paragraph since the claimed limitations were described in terms of their function rather than their mechanical structure); <i>Ethicon, Inc. v. United States Surgical Corp.</i> , 135 F.3d 1456, 1463, 45 USPQ2d 1545, 1550 (Fed. Cir. 1998) ("use of the word 'means' gives rise to a presumption that the inventor used the term advisedly to invoke the statutory mandates for means-plus-function clauses") (quotation omitted). However, compare <i>Al-Site Corp. v. VSI Int'l, Inc.</i> , 174 F.3d 1308, 1317-19, 50 USPQ2d 1161, 1166-67 (Fed. Cir. 1999) (holding that although the claim elements "eyeglass hanger member" and "eyeglass contacting member" include a function, these claim elements do not invoke 35 U.S.C. 112 , sixth paragraph because the claims themselves contain sufficient structural limitations for performing these functions); <i>O.I. Corp. v. Tekmar</i> , 115 F.3d 1576, 1583, 42 USPQ2d 1777, 1782 (Fed. Cir. 1997) (method claim that paralleled means-plus-function apparatus claim but lacked "step for" language did not invoke 35 U.S.C. 112 , sixth paragraph).
2127-Domestic and Foreign Patent Applications as Prior Art	
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2131-Anticipation — Application of 35 U.S.C. 102	
<ul style="list-style-type: none"> 2131.01-Multiple Reference 35 U.S.C. 102 Rejections 2131.02-Genus-Species Situations 2131.03-Anticipation of Ranges 2131.04-Secondary Considerations 2131.05-Nonanalogous or Disparaging Prior Art 	When applicant uses the term "means" or "step" in the preamble, a rejection under 35 U.S.C. 112(b) may be appropriate when it is unclear whether the preamble is reciting a means- (or step-) plus- function limitation or whether the preamble is merely stating the intended use of the claimed invention. When applicant merely states an intended use of the claimed invention in the preamble (e.g., "A device for printing, comprising ..."), the examiner should not construe such language as reciting a means-plus-function limitation.
2132-Pre-AIA 35 U.S.C. 102(a)	The examiner is reminded that, absent a determination that a claim limitation invokes 35 U.S.C. 112(f) , the broadest reasonable interpretation will not be limited to "corresponding structure... and equivalents thereof." <i>Morris</i> , 127 F.3d at 1055, 44 USPQ2d at 1028 ("no comparable mandate in the patent statute that relates the claim scope of non-§ 112 paragraph 6 claims to particular matter found in the specification").
<ul style="list-style-type: none"> 2132.01-Overcoming a Pre-AIA 35 U.S.C. 102(a) Rejection based on a Printed Publication or Patent 	B. The Term "Means" or "Step" or the Generic Placeholder Must Be Modified By Functional Language With respect to the second prong of this analysis, it must be clear that the element in the claims is set forth, at least in part, by the function it performs as opposed to the specific structure, material, or acts that perform the function. See <i>York Prod., Inc. v. Central Tractor Farm & Family Center</i> , 99 F.3d 1568, 1574, 40 USPQ2d 1619, 1624 (Fed. Cir. 1996) (holding that a claim limitation containing the term "means" does not invoke pre-AIA 35 U.S.C. 112 , sixth paragraph, if the claim limitation does not link the term "means" to a specific function); <i>Caterpillar Inc. v. Detroit Diesel Corp.</i> , 961 F.Supp. 1249, 1255, 41 USPQ2d 1876, 1882 (N.D. Ind. 1996) (stating that pre-AIA 35 U.S.C. 112 , sixth paragraph, "applies to functional method claims where the element at issue sets forth a step for reaching a particular result, but not the specific technique or procedure used to achieve the result."); <i>O.I. Corp.</i> , 115 F.3d at 1582-83, 42 USPQ2d at 1782 (With respect to process claims, "[pre-AIA 35 U.S.C. 112 , sixth paragraph] is implicated only when steps <i>plus function</i> without acts are present.... If we were to construe every process claim containing steps described by an 'ing' verb, such as passing, heating, reacting, transferring, etc., into a step-plus-function, we would be limiting process claims in a manner never intended by Congress." (emphasis in original)); see also <i>Baran v. Medical Device Techs., Inc.</i> , 616 F.3d 1309, 1317, 96 USPQ2d 1057, 1063 (Fed. Cir. 2010) (the claimed function may include the functional language that precedes the phrase "means for."). However, "the fact that a particular mechanism...is defined in functional terms is not sufficient to convert a claim element containing that term into a 'means for performing a specified function' within the meaning of section 112(6) ." <i>Greenberg v. Ethicon Endo-Surgery, Inc.</i> , 91 F.3d 1580, 1583, 39 USPQ2d 1783, 1786 (Fed. Cir. 1996) ("detent mechanism" defined in functional terms was not intended to invoke 35 U.S.C. 112 , sixth paragraph); see also <i>Al-Site Corp. v. VSI International Inc.</i> , 174 F.3d 1308, 1318, 50 USPQ2d 1161, 1166-67 (Fed. Cir. 1999) (although the claim elements "eyeglass hanger member" and "eyeglass contacting member" include a function, these claim elements do not invoke pre-AIA 35 U.S.C. 112 , sixth paragraph, because the claims themselves contain sufficient structural limitations for performing those functions). Also, a statement of function appearing only in the claim preamble is generally insufficient to invoke 35 U.S.C.
2133-Pre-AIA 35 U.S.C. 102(b)	
<ul style="list-style-type: none"> 2133.01-Rejections of Continuation-In-Part (CIP) Applications 2133.02-Rejections Based on Publications and Patents 2133.02(a)-Overcoming a Pre-AIA 35 U.S.C. 102(b) Rejection Based on a Printed Publication or Patent 2133.03-Rejections Based on "Public Use" or "On Sale" 2133.03(a)-"Public Use" 2133.03(b)-"On Sale" 2133.03(c)-The "Invention" 2133.03(d)-"In This Country" 	

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- 2133.03(e)(1)-Commercial Exploitation
- 2133.03(e)(2)-Intent
- 2133.03(e)(3)-"Completeness" of the Invention
- 2133.03(e)(4)-Factors Indicative of an Experimental Purpose
- 2133.03(e)(5)-Experimentation and Degree of Supervision and Control
- 2133.03(e)(6)-Permitted Experimental Activity and Testing
- 2133.03(e)(7)-Activity of an Independent Third Party Inventor

2134-Pre-AIA 35 U.S.C. 102(c)

2135-Pre-AIA 35 U.S.C. 102(d)

- 2135.01-The Four Requirements of Pre-AIA 35 U.S.C. 102(d)

2136-Pre-AIA 35 U.S.C. 102(e)

- 2136.01-Status of Unpublished or Published as Redacted U.S. Application as a Reference Under Pre-AIA 35 U.S.C. 102(e)
- 2136.02-Content of the Prior Art Available Against the Claims
- 2136.03-Critical Reference Date
- 2136.04-Different Inventive Entity; Meaning of "By Another"
- 2136.05-Overcoming a Rejection Under Pre-AIA 35 U.S.C. 102(e)
- 2136.05(a)-Antedating a Pre-AIA 35 U.S.C. 102(e) Reference
- 2136.05(b)-Showing The Reference Is Describing An Inventor's Or At Least One Joint Inventor's Own Work

2137-Pre-AIA 35 U.S.C. 102(f)

- 2137.01-[Reserved]
- 2137.02-[Reserved]

2138-Pre-AIA 35 U.S.C. 102(g)

- 2138.01-Interference Practice
- 2138.02-"The Invention Was Made in This Country"
- 2138.03-"By Another Who Has Not Abandoned, Suppressed, or Concealed It"
- 2138.04-"Conception"
- 2138.05-"Reduction to Practice"
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2139-Rejections Under Pre-AIA 35 U.S.C. 102

- 2139.01-Effective Filing Date of a Claimed Invention Under Pre-AIA 35 U.S.C. 102
- 2139.02-Determining Whether To Apply Pre-AIA 35 U.S.C. 102(a), (b), or (e)
- 2139.03-Form Paragraphs for Use in Rejections Under Pre-AIA 35 U.S.C. 102

2140-[Reserved]

2141-Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103

- 2141.01-Scope and Content of the Prior Art
- 2141.01(a)-Analogous and Nonanalogous Art
- 2141.02-Differences Between Prior Art and Claimed Invention

112(f). *O.I. Corp.*, 115 F.3d at 1583, 42 USPQ2d at 1782 ("[A] statement in a preamble of a result that necessarily follows from performing a series of steps does not convert each of those steps into step- plus-function clauses. The steps of 'passing' are not individually associated in the claims with functions performed by the steps of passing.").

The mere use of the term "means" with no associated function rebuts the presumption that **35 U.S.C. 112(f)** is invoked. A function must be recited within the claim limitation, but it is not necessary that a particular format be used. Typically, the claim limitation will use the linking word "for" to associate "means" or a generic placeholder with the function. However, other linking words may be used, such as "so that" or "configured to", provided it is clear that the claim element is reciting a function. In certain circumstances, it is also not necessary to use a linking word if other words used with "means", or the generic placeholder, convey the function. Such words, however, cannot convey specific structure for performing the function or the phrase will not be treated as invoking **35 U.S.C. 112(f)**. For example, "ink delivery means", "module configured to deliver ink" and "means for ink delivery" could all be interpreted as claim elements that invoke **35 U.S.C. 112(f)**. See *Signtech USA*, 174 F.3d at 1356.

C.The Term "Means" or "Step" or the Generic Placeholder Must Not Be Modified By Sufficient Structure, Material, or Acts for Achieving the Specified Function

With respect to the third prong of this analysis, the term "means" or "step" or the generic placeholder recited in the claim must not be modified by sufficiently definite structure, material, or acts for achieving the specified function. See *Seal-Flex*, 172 F.3d at 849, 50 USPQ2d at 1234 (Radar, J., concurring) ("Even when a claim element uses language that generally falls under the step-plus-function format, however, **[35 U.S.C.] 112 ¶ 6** still does not apply when the claim limitation itself recites sufficient acts for performing the specified function."); *Enviro Corp. v. Clestra Cleanroom, Inc.*, 209 F.3d 1360, 54 USPQ2d 1449 (Fed. Cir. 2000) (holding "second baffle means" does not invoke **35 U.S.C. 112**, sixth paragraph, because the word "baffle" itself imparts structure and the claim further recites the structure of the baffle); *Rodime PLC v. Seagate Technology, Inc.*, 174 F.3d 1294, 1303-04, 50 USPQ2d 1429, 1435-36 (Fed. Cir. 1999) (holding "positioning means for moving" does not invoke **35 U.S.C. 112**, sixth paragraph, because the claim further provides a list of the structure underlying the means and the detailed recitation of the structure for performing the moving function removes this element from the purview of **35 U.S.C. 112**, sixth paragraph); *Cole v. Kimberly-Clark Corp.*, 102 F.3d 524, 531, 41 USPQ2d 1001, 1006 (Fed. Cir. 1996) (holding "perforation means...for tearing" does not invoke **35 U.S.C. 112**, sixth paragraph, because the claim describes the structure supporting the tearing function (i.e., perforation)). In other situations, the Federal Circuit has come to a different conclusion. See *Unidynamics Corp. v. Automatic Prod. Int'l*, 157 F.3d 1311, 1319, 48 USPQ2d 1099, 1104 (Fed. Cir. 1998) (holding that "spring means" invokes **35 U.S.C. 112**, sixth paragraph).

Examiners will apply **35 U.S.C. 112(f)** to a claim limitation that uses the term "means" or generic placeholder associated with functional language, unless that term is (1) preceded by a structural modifier, defined in the specification as a particular structure or known by one skilled in the art, that denotes the type of structural device (e.g., "filters"), or (2) otherwise modified by sufficient structure or material for achieving the claimed function. Similarly, examiners will apply **35 U.S.C. 112(f)** to a claim limitation that uses the term "step for" unless that term is modified by sufficient acts for performing the claimed function.

A limitation will not invoke **35 U.S.C. 112(f)** if there is a structural modifier that further describes the term "means" or the generic placeholder. For example, although a generic placeholder like "mechanism" standing alone may invoke **35 U.S.C. 112(f)** when coupled with a function, it will not invoke **35 U.S.C. 112(f)** when it is preceded by a structural modifier (e.g., "detent mechanism"). *Greenberg*, 91 F.3d at 1583, 39 USPQ2d at 1786 (holding that the term "detent mechanism" did not invoke **35 U.S.C. 112**, sixth paragraph because the structural modifier "detent" denotes a type of structural device with a generally understood meaning in the mechanical arts). By contrast, a generic placeholder (e.g., "mechanism," "element," "member") coupled with a function may invoke **35 U.S.C. 112(f)** when it is preceded by a non-structural modifier that does not have any generally understood structural meaning in the art (e.g., "colorant selection mechanism," "lever moving element," or "movable link member"). See *Massachusetts Inst. of Tech.*, 462 F.3d at 1354, 80 USPQ2d at 1231 (The claim recited use of a colorant selection mechanism, to which the court performed a means-plus-function analysis under **pre-AIA 35 U.S.C. 112**, sixth paragraph. The court held that the term "colorant selection", which modifies the generic term "mechanism", was not defined in the specification, had no dictionary definition, nor any generally understood meaning in the art, the term does not connote sufficient structure to a person of ordinary skill in the art to avoid **pre-AIA 35 U.S.C. 112**, sixth paragraph treatment.); *Mas-Hamilton*, 156 F.3d at 1214-1215, 48 USPQ2d at 1017; see also *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1351 (Fed. Cir. 2015) (determining that "[t]he prefix 'distributed learning control' does not impart any structural significance to the term ['module']").

To determine whether a word, term, or phrase coupled with a function denotes structure, examiners may check whether: (1) the specification provides a description sufficient to inform one of ordinary skill in the art that the term denotes structure; (2) general and subject matter specific dictionaries provide evidence that the term has achieved recognition as a noun denoting structure; and/or (3) the prior art provides evidence that the term is an art-recognized structure to perform the claimed function. *Ex parte Rodriguez*, 92 USPQ2d 1395, 1404 (Bd. Pat. App. & Int. 2009) (precedential).

During examination, however, applicants have the opportunity and the obligation to define their inventions precisely, including whether a claim limitation invokes **35 U.S.C. 112(f)**. Thus, if the term "means" or "step" or a generic placeholder is modified by sufficient structure, material or acts for achieving the specified function, the USPTO will consider that presumption has been rebutted and will not apply **35 U.S.C. 112(f)** until such modifying language is deleted from the claim limitation.

It is necessary to decide on an element by element basis whether **35 U.S.C. 112(f)** applies. Not all terms in a means-plus-function or step-plus-function clause are limited to what is disclosed in the written description and equivalents thereof, since **35 U.S.C. 112(f)** applies only to the interpretation of the means or step that performs the recited function. See, e.g., *IMS Technology Inc. v. Haas Automation Inc.*, 206 F.3d 1422, 54 USPQ2d 1129 (Fed. Cir. 2000) (the term "data block" in the phrase "means to sequentially display data block inquiries" was not the means that caused the sequential display, and its meaning was not limited to the disclosed embodiment and equivalents thereof). Each claim must be independently reviewed to determine the applicability of **35 U.S.C. 112(f)** even where the application contains substantially similar process and apparatus claims. *O.I. Corp.*, 115 F.3d at 1583-1584, 42 USPQ2d at 1782 ("We understand that the steps in the method claims are essentially in the same language as the limitations in the apparatus claim, albeit without the 'means for' qualification.... Each claim must be independently reviewed in order to determine if it is subject to the requirements of

2141.03-Level of Ordinary Skill in the Art
2142-Legal Concept of Prima Facie Obviousness
2143-Examples of Basic Requirements of a Prima Facie Case of Obviousness
<ul style="list-style-type: none"> 2143.01-Suggestion or Motivation To Modify the References 2143.02-Reasonable Expectation of Success Is Required 2143.03-All Claim Limitations Must Be Considered
2144-Supporting a Rejection Under 35 U.S.C. 103
<ul style="list-style-type: none"> 2144.01-Implicit Disclosure 2144.02-Reliance on Scientific Theory 2144.03-Reliance on Common Knowledge in the Art or "Well Known" Prior Art 2144.04-Legal Precedent as Source of Supporting Rationale 2144.05-Obviousness of Similar and Overlapping Ranges, Amounts, and Proportions 2144.06-Art Recognized Equivalence for the Same Purpose 2144.07-Art Recognized Suitability for an Intended Purpose 2144.08-Obviousness of Species When Prior Art Teaches Genus 2144.09-Close Structural Similarity Between Chemical Compounds (Homologs, Analogues, Isomers)
2145-Consideration of Applicant's Rebuttal Arguments
2146-Pre-AIA 35 U.S.C. 103(c)
<ul style="list-style-type: none"> 2146.01-Prior Art Disqualification Under Pre-AIA 35 U.S.C. 103(c) 2146.02-Establishing Common Ownership or Joint Research Agreement Under Pre-AIA 35 U.S.C. 103(c) 2146.03-Examination Procedure With Respect to Pre-AIA 35 U.S.C. 103(c) 2146.03(a)-Provisional Rejection (Obviousness) Under 35 U.S.C. 103 Using Provisional Prior Art Under Pre-AIA 35 U.S.C. 102(e)
2147-Biotechnology Process Applications; Pre-AIA 35 U.S.C. 103(b)
2148-Form Paragraphs for Use in Rejections Under Pre-AIA 35 U.S.C. 103
2149-[Reserved]
2150-Examination Guidelines for 35 U.S.C. 102 and 103 as Amended by the First Inventor To File Provisions of the Leahy-Smith America Invents Act
2151-Overview of the Changes to 35 U.S.C. 102 and 103 in the AIA
2152-Detailed Discussion of AIA 35 U.S.C. 102(a) and (b)
<ul style="list-style-type: none"> 2152.01-Effective Filing Date of the Claimed Invention 2152.02-Prior Art Under AIA 35 U.S.C. 102(a)(1) (Patented, Described in a Printed Publication, or in Public Use, on Sale, or Otherwise Available to the Public) 2152.02(a)-Patented

section 112, ¶ 6. Interpretation of claims would be confusing indeed if claims that are not means- or step- plus function were to be interpreted as if they were, only because they use language similar to that used in other claims that are subject to this provision.").

II. DESCRIPTION NECESSARY TO SUPPORT A CLAIM LIMITATION WHICH INVOKES 35 U.S.C. 112(f) or Pre-AIA 35 U.S.C. 112, SIXTH PARAGRAPH

35 U.S.C. 112(f) states that a claim limitation expressed in means- (or step-) plus-function language "shall be construed to cover the corresponding structure...described in the specification and equivalents thereof." "If one employs means plus function language in a claim, one must set forth in the specification an adequate disclosure showing what is meant by that language. If an applicant fails to set forth an adequate disclosure, the applicant has in effect failed to particularly point out and distinctly claim the invention as required by the **35 U.S.C. 112(b)** [or the second paragraph of **pre-AIA section 112**]." *In re Donaldson Co.*, 16 F.3d 1189, 1195, 29 USPQ2d 1845, 1850 (Fed. Cir. 1994) (*en banc*).

A. The Corresponding Structure Must Be Disclosed In the Specification Itself in a Way That One Skilled In the Art Will Understand What Structure Will Perform the Recited Function

The proper test for meeting the definiteness requirement is that the corresponding structure (or material or acts) of a means- (or step-) plus-function limitation must be disclosed in the specification itself in a way that one skilled in the art will understand what structure (or material or acts) will perform the recited function. See *Atmel Corp. v. Information Storage Devices, Inc.*, 198 F.3d 1374, 1381, 53 USPQ2d 1225, 1230 (Fed. Cir. 1999). In *Atmel*, the patentee claimed an apparatus that included a "high voltage generating means" limitation, thereby invoking **35 U.S.C. 112**, sixth paragraph. The specification incorporated by reference a non-patent document from a technical journal, which described a particular high voltage generating circuit. The Federal Circuit concluded that the title of the article in the specification may, by itself, be sufficient to indicate to one skilled in the art the precise structure of the means for performing the recited function, and it remanded the case to the district court "to consider the knowledge of one skilled in the art that indicated, based on unrefuted testimony, that the specification disclosed sufficient structure corresponding to the high-voltage means limitation." *Id.* at 1382, 53 USPQ2d at 1231.

If there is no disclosure of structure, material or acts for performing the recited function, the claim fails to satisfy the requirements of **35 U.S.C. 112(b)**. The disclosure of the structure (or material or acts) may be implicit or inherent in the specification if it would have been clear to those skilled in the art what structure (or material or acts) corresponds to the means- (or step-) plus-function claim limitation. See *id.* at 1380, 53 USPQ2d at 1229; *In re Dossel*, 115 F.3d 942, 946-47, 42 USPQ2d 1881, 1885 (Fed. Cir. 1997). However, "[a] bare statement that known techniques or methods can be used does not disclose structure" in the context of a means plus function limitation. *Biomedino, LLC v. Waters Technology Corp.*, 490 F.3d 946, 952, 83 USPQ2d 1118, 1123 (Fed. Cir. 2007) (Disclosure that an invention "may be controlled by known differential pressure, valving and control equipment" was not a disclosure of any structure corresponding to the claimed "control means for operating [a] valving" and the claim was held indefinite). See also *Budde v. Harley-Davidson, Inc.*, 250 F.3d 1369, 1376, 58 USPQ2d 1801, 1806 (Fed. Cir. 2001); *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1115-18, 63 USPQ2d 1725, 1731-34 (Fed. Cir. 2002) (Court interpreted the language of the "third monitoring means for monitoring the ECG signal...for activating ..." to require the same means to perform both functions and the only entity referenced in the specification that could possibly perform both functions is the physician. The court held that excluding the physician, no structure accomplishes the claimed dual functions. Because no structure disclosed in the embodiments of the invention actually performs the claimed dual functions, the specification lacks corresponding structure as required by **35 U.S.C. 112**, sixth paragraph, and fails to comply with **35 U.S.C. 112**, second paragraph.).

Whether a claim reciting an element in means- (or step-) plus-function language fails to comply with **35 U.S.C. 112(b)** or **pre-AIA 35 U.S.C. 112**, second paragraph, because the specification does not disclose adequate structure (or material or acts) for performing the recited function is closely related to the question of whether the specification meets the description requirement in **35 U.S.C. 112(a)** or **pre-AIA 35 U.S.C. 112**, first paragraph. See *In re Noll*, 545 F.2d 141, 149, 191 USPQ 721, 727 (CCPA 1976) (unless the means-plus-function language is itself unclear, a claim limitation written in means-plus-function language meets the definiteness requirement in **35 U.S.C. 112**, second paragraph, so long as the specification meets the written description requirement in **35 U.S.C. 112**, first paragraph). *In Aristocrat Techs. Australia PTY Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1336-37, 86 USPQ2d 1235, 1242 (Fed. Cir. 2008), the court stated:

Enablement of a device requires only the disclosure of sufficient information so that a person of ordinary skill in the art could make and use the device. A section 112[(f) or pre-AIA] paragraph 6 disclosure, however, serves the very different purpose of limiting the scope of the claim to the particular structure disclosed, together with equivalents. ... For example, in *Atmel Corp. v. Information Storage Devices, Inc.*, 198 F.3d 1374, 1380[], 53 USPQ2d 1225, 1230[] (Fed. Cir. 1999), the court embraced the proposition that 'consideration of the understanding of one skilled in the art in no way relieves the patentee of adequately disclosing sufficient structure in the specification.' It is not enough for the patentee simply to state or later argue that persons of ordinary skill in the art would know what structures to use to accomplish the claimed function. The court in *Biomedino, LLC v. Waters Technologies Corp.*, 490 F.3d 946, 953[], 83 USPQ2d 1118, 1123[] (Fed. Cir. 2007), put the point this way: "The inquiry is whether one of skill in the art would understand the specification itself to disclose a structure, not simply whether that person would be capable of implementing that structure."

The invocation of **35 U.S.C. 112(f)** does not exempt an applicant from compliance with **35 U.S.C. 112(a)** and **35 U.S.C. 112(b)** or **pre-AIA 35 U.S.C. 112**, first and second paragraphs. See *Donaldson*, 16 F.3d at 1195, 29 USPQ2d at 1850; *In re Knowlton*, 481 F.2d 1357, 1366, 178 USPQ 486, 493 (CCPA 1973) ("[The sixth paragraph of section 112] cannot be read as creating an exception either to the description requirement of the first paragraph ... or to the definiteness requirement found in the second paragraph of **section 112**. Means-plus-function language can be used in the claims, but the claims must still accurately define the invention.").

Under certain limited circumstances, the written description does not have to explicitly describe the structure (or material or acts) corresponding to a means- (or step-) plus-function limitation to particularly point out and distinctly claim the invention as required by **35 U.S.C. 112(b)** or **pre-AIA 35 U.S.C. 112**, second paragraph. See *Dossel*, 115 F.3d at 946, 42 USPQ2d at 1885. Under proper circumstances, drawings may provide a written description of an invention as required by **35 U.S.C. 112**. *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1565, 19 USPQ2d 1111, 1118 (Fed. Cir. 1991). Further, disclosure of

- 2152.02(b)-Described in a Printed Publication
- 2152.02(c)-In Public Use
- 2152.02(d)-On Sale
- 2152.02(e)-Otherwise Available to the Public
- 2152.02(f)-No Requirement of "By Others"
- 2152.03-Admissions
- 2152.04-The Meaning of "Disclosure"
- 2152.05-Determining Whether To Apply 35 U.S.C. 102(a)(1) or 102(a)(2)
- 2152.06-Overcoming a 35 U.S.C. 102(a)(1) or 102(a)(2) Rejection Based on a Printed Publication or Patent
- 2152.07-Form Paragraphs for Use in Rejections Under AIA 35 U.S.C. 102

2153-Prior Art Exceptions Under 35 U.S.C. 102(b)(1) to AIA 35 U.S.C. 102(a)(1)

- 2153.01-Prior Art Exception Under AIA 35 U.S.C. 102(b)(1)(A) To AIA 35 U.S.C. 102(a)(1) (Grace Period Inventor Or Inventor-Originated Disclosure Exception)
- 2153.01(a)-Grace Period Inventor Disclosure Exception
- 2153.01(b)-Grace Period Inventor-Originated Disclosure Exception
- 2153.02-Prior Art Exception Under AIA 35 U.S.C. 102(b)(1)(B) To AIA 35 U.S.C. 102(a)(1) (Inventor Or Inventor-Originated Prior Public Disclosure Exception)

2154-Provisions Pertaining to Subject Matter in a U.S. Patent or Application Effectively Filed Before the Effective Filing Date of the Claimed Invention

- 2154.01-Prior Art Under AIA 35 U.S.C. 102(a)(2) "U.S. Patent Documents"
- 2154.01(a)-WIPO Published Applications
- 2154.01(b)-Determining When Subject Matter Was Effectively Filed Under AIA 35 U.S.C. 102(d)
- 2154.01(c)-Requirement Of "Names Another Inventor"
- 2154.01(d)-Provisional Rejections Under 35 U.S.C. 102(a)(2); Reference Is a Copending U.S. Patent Application
- 2154.02-Prior Art Exceptions Under 35 U.S.C. 102(b)(2) to AIA 35 U.S.C. 102(a)(2)
- 2154.02(a)-Prior Art Exception Under AIA 35 U.S.C. 102(b)(2)(A) to AIA 35 U.S.C. 102(a)(2) (Inventor-Originated Disclosure Exception)
- 2154.02(b)-Prior Art Exception Under AIA 35 U.S.C. 102(b)(2)(B) to AIA 35 U.S.C. 102(a)(2) (Inventor or Inventor-Originated Prior Public Disclosure Exception)
- 2154.02(c)-Prior Art Exception Under AIA 35 U.S.C. 102(b)(2)(C) to AIA 35 U.S.C. 102(a)(2) (Common Ownership or Obligation of Assignment)

2155-Use of Affidavits or Declarations Under 37 CFR 1.130 To Overcome Prior Art Rejections

- 2155.01-Showing That the Disclosure Was Made by the Inventor or a Joint Inventor
- 2155.02-Showing That the Subject Matter Disclosed Had Been Previously Publicly Disclosed by the Inventor or a Joint Inventor
- 2155.03-Showing That the Disclosure was

structure corresponding to a means-plus-function limitation may be implicit in the written description if it would have been clear to those skilled in the art what structure must perform the function recited in the means-plus-function limitation. See *Atmel Corp. v. Information Storage Devices Inc.*, 198 F.3d 1374, 1379, 53 USPQ2d 1225, 1228 (Fed. Cir. 1999) (stating that the "one skilled in the art" analysis should apply in determining whether sufficient structure has been disclosed to support a means-plus-function limitation); *Dossel*, 115 F.3d at 946-47, 42 USPQ2d at 1885 ("Clearly, a unit which receives digital data, performs complex mathematical computations and outputs the results to a display must be implemented by or on a general or special purpose computer (although it is not clear why the written description does not simply state 'computer' or some equivalent phrase).").

A claim may also be indefinite when the 3-prong analysis for determining whether the claim limitation should be interpreted under **35 U.S.C. 112(f)** is inconclusive because of ambiguous words in the claim. After taking into consideration the language in the claims, the specification, and how those of ordinary skill in the art would understand the language in the claims in light of the disclosure, the examiner should make a determination regarding whether the words in the claim recite sufficiently definite structure that performs the claimed function. If the applicant disagrees with the examiner's interpretation of the claim limitation, the applicant has the opportunity during the application process to present arguments, and amend the claim if needed, to clarify whether **35 U.S.C. 112(f)** applies.

B.Computer-Implemented Means-Plus-Function Limitations

For a computer-implemented **35 U.S.C. 112(f)** claim limitation, the specification must disclose an algorithm for performing the claimed specific computer function, or else the claim is indefinite under **35 U.S.C. 112(b)(b)**. See *Net MoneyIN, Inc. v. Verisign, Inc.*, 545 F.3d 1359, 1367 (Fed. Cir. 2008). See also *In re Aoyama*, 656 F.3d 1293, 1297, 99 USPQ2d 1936, 1939 (Fed. Cir. 2011) ("[W]hen the disclosed structure is a computer programmed to carry out an algorithm, 'the disclosed structure is not the general purpose computer, but rather that special purpose computer programmed to perform the disclosed algorithm.'") (quoting *WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349, 51 USPQ2d 1385, 1391 (Fed. Cir. 1999)).

In cases involving a special purpose computer-implemented means-plus-function limitation, the Federal Circuit has consistently required that the structure be more than simply a general purpose computer or microprocessor and that the specification must disclose an algorithm for performing the claimed function. See, e.g., *Noah Systems Inc. v. Intuit Inc.*, 675 F.3d 1302, 1312, 102 USPQ2d 1410, 1417 (Fed. Cir. 2012); *Aristocrat*, 521 F.3d at 1333, 86 USPQ2d at 1239.

For a computer-implemented means-plus-function claim limitation invoking **35 U.S.C. 112(f)** the Federal Circuit has stated that "a microprocessor can serve as structure for a computer-implemented function only where the claimed function is 'coextensive' with a microprocessor itself." *EON Corp. IP Holdings LLC v. AT&T Mobility LLC*, 785 F.3d 616, 622, citing *In re Katz Interactive Call Processing Patent Litigation*, 639 F.3d 1303, 1316 (Fed. Cir. 2011). "It is only in the rare circumstances where any general-purpose computer without any special programming can perform the function that an algorithm need not be disclosed." *EON Corp.*, 785 F.3d at 621, quoting *Ergo Licensing, LLC v. CareFusion 303, Inc.*, 673 F.3d 1361, 1365 (Fed. Cir. 2012). "[S]pecial programming" includes any functionality that is not 'coextensive' with a microprocessor or general purpose computer." *EON Corp.*, 785 F.3d at 623 (citations omitted). "Examples of such coextensive functions are 'receiving' data, 'storing' data, and 'processing' data—the only three functions on which the Katz court vacated the district court's decision and remanded for the district court to determine whether disclosure of a microprocessor was sufficient." *Id.* at 622. Thus, "[a] microprocessor or general purpose computer lends sufficient structure only to basic functions of a microprocessor. All other computer-implemented functions require disclosure of an algorithm." *Id.*

To claim a means for performing a specific computer-implemented function and then to disclose only a general purpose computer as the structure designed to perform that function amounts to pure functional claiming. *Aristocrat*, 521 F.3d 1328 at 1333, 86 USPQ2d at 1239. In this instance, the structure corresponding to a **35 U.S.C. 112(f)** claim limitation for a computer-implemented function must include the algorithm needed to transform the general purpose computer or microprocessor disclosed in the specification. *Aristocrat*, 521 F.3d at 1333, 86 USPQ2d at 1239; *Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1340, 86 USPQ2d 1609, 1623 (Fed. Cir. 2008); *WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349, 51 USPQ2d 1385, 1391 (Fed. Cir. 1999). The corresponding structure is not simply a general purpose computer by itself but the special purpose computer as programmed to perform the disclosed algorithm. *Aristocrat*, 521 F.3d at 1333, 86 USPQ2d at 1239. Thus, the specification must sufficiently disclose an algorithm to transform a general purpose microprocessor to the special purpose computer. See *Aristocrat*, 521 F.3d at 1338, 86 USPQ2d at 1241. ("Aristocrat was not required to produce a listing of source code or a highly detailed description of the algorithm to be used to achieve the claimed functions in order to satisfy **35 U.S.C. § 112 ¶ 6**. It was required, however, to at least disclose the algorithm that transforms the general purpose microprocessor to a 'special purpose computer programmed to perform the disclosed algorithm.'" (quoting *WMS Gaming*, 184 F.3d at 1349, 51 USPQ2d at 1391.)) An algorithm is defined, for example, as "a finite sequence of steps for solving a logical or mathematical problem or performing a task." Microsoft Computer Dictionary, Microsoft Press, 5th edition, 2002. Applicant may express the algorithm in any understandable terms including as a mathematical formula, in prose, in a flow chart, or "in any other manner that provides sufficient structure." *Finisar*, 523 F.3d at 1340, 86 USPQ2d at 1623; see also *Intel Corp. v. VIA Techs., Inc.*, 319 F.3d 1357, 1366, 65 USPQ2d 1934, 1941 (Fed. Cir. 2003); *In re Dossel*, 115 F.3d 942, 946-47, 42 USPQ2d 1881, 1885 (Fed. Cir. 1997); *Typhoon Touch Inc. v. Dell Inc.*, 659 F.3d 1376, 1385, 100 USPQ2d 1690, 1697 (Fed. Cir. 2011); *In re Aoyama*, 656 F.3d at 1306, 99 USPQ2d at 1945.

The Federal Circuit case law regarding special purpose computer-implemented means-plus-function claims is divided into two distinct groups. The first group includes cases in which the specification discloses no algorithm, and the second group includes cases in which the specification does disclose an algorithm, but an issue exists as to whether the disclosure is adequate to perform the entire claimed function(s). The sufficiency of the algorithm is determined in view of what one of ordinary skill in the art would understand as sufficient to define the structure and make the boundaries of the claim understandable. See *Noah*, 675 F.3d at 1313, 102 USPQ2d at 1417.

Accordingly, a rejection under **35 U.S.C. 112(b)** or **pre-AIA 35 U.S.C. 112**, second paragraph is appropriate if the specification discloses no corresponding algorithm associated with a computer or microprocessor. *Aristocrat*, 521 F.3d at 1337-38, 86 USPQ2d at 1242. For example, in *Advanced Ground Information Systems, Inc. v. Life360, Inc.*, 830 F.3d 1341 (Fed. Cir. 2016), the Federal Circuit determined that the term "symbol generator" is a computer-implemented means-plus-function limitation and that "[t]he specifications of the patents-in-suit do not disclose an operative algorithm for the claim

Made, or That Subject Matter had Been Previously Publicly Disclosed, by Another Who Obtained the Subject Matter Disclosed Directly or Indirectly From the Inventor or a Joint Inventor

- 2155.04-Enablement
- 2155.05-Who May File an Affidavit or Declaration Under 37 CFR 1.130
- 2155.06-Situations in Which an Affidavit or Declaration Is Not Available

2156-Joint Research Agreements

2157-Improper Naming of Inventors

2158-AIA 35 U.S.C. 103

- 2158.01-Form Paragraphs for Use in Rejections Under AIA 35 U.S.C. 103

2159-Applicability Date Provisions and Determining Whether an Application Is Subject to the First Inventor To File Provisions of the AIA

- 2159.01-Applications Filed Before March 16, 2013
- 2159.02-Applications Filed on or After March 16, 2013
- 2159.03-Applications Subject to the AIA but Also Containing a Claimed Invention Having an Effective Filing Date Before March 16, 2013
- 2159.04-Applicant Statement in Transition Applications Containing a Claimed Invention Having an Effective Filing Date on or After March 16, 2013

2160-[Reserved]

2161-Three Separate Requirements for Specification Under 35 U.S.C. 112(a) or Pre-AIA 35 U.S.C. 112, First Paragraph

- 2161.01-Computer Programming, Computer Implemented Inventions, and 35 U.S.C. 112(a) or Pre-AIA 35 U.S.C. 112, First Paragraph

2162-Policy Underlying 35 U.S.C. 112(a) or Pre-AIA 35 U.S.C. 112, First Paragraph

2163-Guidelines for the Examination of Patent Applications Under the 35 U.S.C. 112(a) or Pre-AIA 35 U.S.C. 112, first paragraph, "Written Description" Requirement

- 2163.01-Support for the Claimed Subject Matter in Disclosure
- 2163.02-Standard for Determining Compliance With the Written Description Requirement
- 2163.03-Typical Circumstances Where Adequate Written Description Issue Arises
- 2163.04-Burden on the Examiner with Regard to the Written Description Requirement
- 2163.05-Changes to the Scope of Claims
- 2163.06-Relationship of Written Description Requirement to New Matter
- 2163.07-Amendments to Application Which Are Supported in the Original Description
- 2163.07(a)-Inherent Function, Theory, or Advantage
- 2163.07(b)-Incorporation by Reference

2164-The Enablement Requirement

- 2164.01-Test of Enablement
- 2164.01(a)-Undue Experimentation Factors

elements reciting 'symbol generator.'" *Id.* at 1348-49. The Federal Circuit upheld the district court's determination that the term "symbol generator" is indefinite, observing that "although the district court recognized that the specification describes, in general terms, that symbols are generated based on the latitude and longitude of the participants, it nonetheless determined that the specification fails to disclose an algorithm or description as to how those symbols are actually generated." *Id.* at 1349 (internal quotation marks and alterations omitted). See also, *Blackboard, Inc. v. Desire2Learn, Inc.*, 574 F.3d 1371, 1382-83 (Fed. Cir. 2009) (concluding that the description of a server computer's "access control manager" software feature was insufficient disclosure of corresponding structure to support the computer-implemented "means for assigning" limitation because "what the patent calls the 'access control manager' is simply an abstraction that describes the function of controlling access to course materials ... [b]ut how it does so is left undisclosed."); *Aristocrat*, 521 F.3d at 1334-35 (explaining that "the [patent's] description of the embodiments is simply a description of the outcome of the claimed functions, not a description of the structure, i.e., the computer programmed to execute a particular algorithm").

Mere reference to a general purpose computer with appropriate programming without providing an explanation of the appropriate programming, or simply reciting "software" without providing detail about the means to accomplish a specific software function, would not be an adequate disclosure of the corresponding structure to satisfy the requirements of **35 U.S.C. 112(b)** or **pre-AIA 35 U.S.C. 112**, second paragraph. *Aristocrat*, 521 F.3d at 1334, 86 USPQ2d at 1239; *Finisar*, 523 F.3d at 1340-41, 86 USPQ2d at 1623. In addition, merely referencing a specialized computer (e.g., a "bank computer"), some undefined component of a computer system (e.g., "access control manager"), "logic," "code," or elements that are essentially a black box designed to perform the recited function, will not be sufficient because there must be some explanation of how the computer or the computer component performs the claimed function. *Blackboard, Inc. v. Desire2Learn, Inc.*, 574 F.3d 1371, 1383-85, 91 USPQ2d 1481, 1491-93 (Fed. Cir. 2009); *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1366-67, 88 USPQ2d 1751, 1756-57 (Fed. Cir. 2008); *Rodriguez*, 92 USPQ2d at 1405-06.

If the specification explicitly discloses an algorithm, the sufficiency of the disclosure of the algorithm must be determined in light of the level of ordinary skill in the art. *Aristocrat*, 521 F.3d at 1337, 86 USPQ2d at 1241; *AllVoice Computing PLC v. Nuance Commc'ns, Inc.*, 504 F.3d 1236, 1245, 84 USPQ2d 1886, 1893 (Fed. Cir. 2007); *Intel Corp.*, 319 F.3d at 1366-67, 65 USPQ2d 1934, 1941 (knowledge of a person of ordinary skill in the art can be used to make clear how to implement a disclosed algorithm). The examiner should determine whether one skilled in the art would know how to program the computer to perform the necessary steps described in the specification (i.e., the invention is enabled), and that the inventor was in possession of the invention (i.e., the invention meets the written description requirement). Thus, the specification must sufficiently disclose an algorithm to transform a general purpose microprocessor to a special purpose computer so that a person of ordinary skill in the art can implement the disclosed algorithm to achieve the claimed function. *Aristocrat*, 521 F.3d at 1338, 86 USPQ2d at 1242.

See *Noah*, 675 F.3d at 1319 (holding that "[c]omputer- implemented means-plus- function claims are indefinite unless the specification discloses an algorithm to perform the function associated with the limitation[.]" and that "[w]hen the specification discloses an algorithm that only accomplishes one of multiple identifiable functions performed by a means-plus-function limitation, the specification is treated as if it disclosed no algorithm.").

The sufficiency of the algorithm is determined in view of what one of ordinary skill in the art would understand as sufficient to define the structure and make the boundaries of the claim understandable. For example, in *Williamson*, the Federal Circuit found that the term "distributed learning control module" is a means-plus- function limitation that performs three specialized functions (i.e., "receiving," "relaying," and "coordinating"), which "must be implemented in a special purpose computer." *Williamson*, 792 F.3d at 1351-52. The Federal Circuit explained that "[w]here there are multiple claimed functions, as we have here, the [specification] must disclose adequate corresponding structure to perform a l of the claimed functions." *Id.* Yet the Federal Circuit determined that the specification "fails to disclose any structure corresponding to the 'coordinating' function." *Id.* at 1354. Specifically, the Federal Circuit found no "disclosure of an algorithm corresponding to the claimed 'coordinating' function," concluding that the figures in the specification relied upon by patentee as disclosing the required algorithm, instead describe "a presenter display interface" and not an algorithm corresponding to the claimed "coordinating" function. *Id.* at 1353-54. Accordingly, the Federal Circuit affirmed the district court's judgment that claims containing the "distributed learning control module" limitation are invalid for indefiniteness under **35 U.S.C. 112(b)**. *Id.* at 1354.

Similarly in *Media Rights Technologies, Inc. v. Capital One Financial Corp.*, 800 F.3d 1366, 1374 (Fed. Cir. 2015), the Federal Circuit determined that the term "compliance mechanism" is a means-plus-function limitation that performs four computer implemented functions (i.e., "controlling data output by diverting a data pathway; monitoring the controlled data pathway; managing an output path by diverting a data pathway; and stopping the play of media content"). The Federal Circuit determined "that the specification fails to adequately disclose the structure to perform all four of [the 'compliance mechanism's'] functions" and affirmed the district court's decision that the "compliance mechanism" limitation is indefinite. *Id.* at 1375. Specifically, the Federal Circuit found that "the specification fails to disclose an operative algorithm for both the 'controlling data output' and 'managing output path' functions[.]" which "both require diverting a data pathway[.]" because the recited C++ source code in the specification "only returns various error messages" and "does not, accordingly, explain how to perform the diverting function[.]" *Id.* at 1374-75. "Additionally, the specification does not disclose sufficient structure for the 'monitoring' function[.]" because the disclosed "set of rules . . . which the 'copyright compliance mechanism' applies to monitor the data pathway to ensure there is no unauthorized recording of electronic media . . . provides no detail about the rules themselves or how the 'copyright compliance mechanism' determines whether the rules are being enforced." *Id.* at 1375.

In several Federal Circuit cases, the patentees argued that the requirement for the disclosure of an algorithm can be avoided if one of ordinary skill in the art is capable of writing the software to convert a general purpose computer to a special purpose computer to perform the claimed function. See, e.g., *Blackboard*, 574 F.3d at 1385, 91 USPQ2d at 1493; *Biomedino*, 490 F.3d at 952, 83 USPQ2d at 1123; *Atmel Corp.*, 198 F.3d at 1380, 53 USPQ2d at 1229. Such argument was found to be unpersuasive because the understanding of one skilled in the art does not relieve the patentee of the duty to disclose sufficient structure to support means-plus-function claim terms. *Blackboard*, 574 F.3d at 1385, 91 USPQ2d at 1493 ("A patentee cannot avoid providing specificity as to structure simply because someone of ordinary skill in the art would be able to devise a means to perform the claimed function."); *Atmel Corp.*, 198 F.3d at 1380, 53 USPQ2d at 1229 ("[C]onsideration of the understanding of one skilled in the art in no way relieves the patentee of adequately disclosing

- 2164.01(b)-How to Make the Claimed Invention
- 2164.01(c)-How to Use the Claimed Invention
- 2164.02-Working Example
- 2164.03-Relationship of Predictability of the Art and the Enablement Requirement
- 2164.04-Burden on the Examiner Under the Enablement Requirement
- 2164.05-Determination of Enablement Based on Evidence as a Whole
- 2164.05(a)-Specification Must Be Enabling as of the Filing Date
- 2164.05(b)-Specification Must Be Enabling to Persons Skilled in the Art
- 2164.06-Quantity of Experimentation
- 2164.06(a)-Examples of Enablement Issues-Missing Information
- 2164.06(b)-Examples of Enablement Issues — Biological and Chemical Cases
- 2164.06(c)-Examples of Enablement Issues — Computer Programming Cases
- 2164.07-Relationship of Enablement Requirement to Utility Requirement of 35 U.S.C. 101
- 2164.08-Enablement Commensurate in Scope With the Claims
- 2164.08(a)-Single Means Claim
- 2164.08(b)-Inoperative Subject Matter
- 2164.08(c)-Critical Feature Not Claimed

2165-The Best Mode Requirement

- 2165.01-Considerations Relevant to Best Mode
- 2165.02-Best Mode Requirement Compared to Enablement Requirement
- 2165.03-Requirements for Rejection for Lack of Best Mode
- 2165.04-Examples of Evidence of Concealment

2166-Rejections Under 35 U.S.C. 112(a) or Pre-AIA 35 U.S.C. 112, First Paragraph

2167-2170-[Reserved]

2171-Two Separate Requirements for Claims Under 35 U.S.C. 112 (b) or Pre-AIA 35 U.S.C. 112, Second Paragraph

2172-Subject Matter Which the Inventor or a Joint Inventor Regards as The Invention

- 2172.01-Unclaimed Essential Matter

2173-Claims Must Particularly Point Out and Distinctly Claim the Invention

- 2173.01-Interpreting the Claims
- 2173.02-Determining Whether Claim Language is Definite
- 2173.03-Correspondence Between Specification and Claims
- 2173.04-Breadth Is Not Indefiniteness
- 2173.05-Specific Topics Related to Issues Under 35 U.S.C. 112(b) or Pre-AIA 35 U.S.C. 112, Second Paragraph
- 2173.05(a)-New Terminology
- 2173.05(b)-Relative Terminology
- 2173.05(c)-Numerical Ranges and Amounts Limitations
- 2173.05(d)-Exemplary Claim Language

sufficient structure in the specification."). The specification must explicitly disclose the algorithm for performing the claimed function, and simply reciting the claimed function in the specification will not be a sufficient disclosure for an algorithm which, by definition, must contain a sequence of steps. *Blackboard*, 574 F.3d at 1384, 91 USPQ2d at 1492 (stating that language that simply describes the function to be performed describes an outcome, not a means for achieving that outcome); Microsoft Computer Dictionary, Microsoft Press, 5th edition, 2002; see also *Encyclopaedia Britannica, Inc. v. Alpine Elecs., Inc.*, 355 Fed. App'x 389, 394-95 (Fed. Cir. 2009) (holding that implicit or inherent disclosure of a class of algorithms for performing the claimed functions is not sufficient, and the purported "one-step" algorithm is not an algorithm at all) (unpublished). *EON Corp. IP Holdings LLC v. AT&T Mobility LLC*, 785 F.3d 616, 623 (Fed. Cir. 2015) (disagreeing "that a microprocessor can serve as sufficient structure for a software function if a person of ordinary skill in the art could implement the software function"); *Blackboard*, 574 F.3d at 1385 (explaining that "[t]he fact that an ordinarily skilled artisan might be able to design a program to create an access control list based on the system users' predetermined roles goes to enablement[,]" whereas "[t]he question before us is whether the specification contains a sufficiently precise description of the 'corresponding structure' to satisfy [pre-AIA] [section 112](#), paragraph 6, not whether a person of skill in the art could devise some means to carry out the recited function").

Often the supporting disclosure for a computer-implemented invention discusses the implementation of the functionality of the invention through hardware, software, or a combination of both. In this situation, a question can arise as to which mode of implementation supports the means-plus-function limitation. The language of [35 U.S.C. 112\(f\)](#) requires that the recited "means" for performing the specified function shall be construed to cover the corresponding "structure or material" described in the specification and equivalents thereof. Therefore, by choosing to use a means-plus-function limitation and invoke [35 U.S.C. 112\(f\)](#) applicant limits that claim limitation to the disclosed structure, i.e., implementation by hardware or the combination of hardware and software, and equivalents thereof. Therefore, the examiner should not construe the limitation as covering pure software implementation.

However, if there is no corresponding structure disclosed in the specification (i.e., the limitation is only supported by software and does not correspond to an algorithm and the computer or microprocessor programmed with the algorithm), the limitation should be deemed indefinite as discussed above, and the claim should be rejected under [35 U.S.C. 112\(b\)](#) or [pre-AIA 35 U.S.C. 112](#), second paragraph. It is important to remember that claims must be interpreted as a whole; so, a claim that includes a means-plus-function limitation that corresponds to software per se (and is thus indefinite for lacking structural support in the specification) is not necessarily directed as a whole to software per se unless the claim lacks other structural limitations.

As noted below in subsection III., if it is unclear whether there is sufficient supporting structure or whether the algorithm is adequate to perform the entire claimed function, it is appropriate to reject the claim under [35 U.S.C. 112\(b\)](#) or [pre-AIA 35 U.S.C. 112](#), second paragraph.

When a claim containing a computer-implemented [35 U.S.C. 112\(f\)](#) claim limitation is found to be indefinite under [35 U.S.C. 112\(b\)](#) for failure to disclose sufficient corresponding structure (e.g., the computer and the algorithm) in the specification that performs the entire claimed function, it will also lack written description under [35 U.S.C. 112\(a\)](#). See [MPEP § 2163.03](#), subsection VI. Examiners should further consider whether the disclosure contains sufficient information regarding the subject matter of the claims as to enable one skilled in the pertinent art to make and use the full scope of the claimed invention in compliance with the enablement requirement of [35 U.S.C. 112\(a\)](#). See [MPEP § 2161.01](#), subsection III, and [MPEP § 2164.08](#).

C. The Supporting Disclosure Clearly Links or Associates the Disclosed Structure, Material, or Acts to the Claimed Function
The structure disclosed in the written description of the specification is the corresponding structure only if the written description of the specification or the prosecution history **clearly links or associates** that structure to the function recited in a means- (or step-) plus-function claim limitation under [35 U.S.C. 112\(f\)](#) or [pre-AIA 35 U.S.C. 112](#), sixth paragraph. See *B. Braun Medical Inc., v. Abbott Laboratories*, 124 F.3d 1419, 1424, 43 USPQ2d 1896, 1900 (Fed. Cir. 1997). The requirement that a particular structure be clearly linked with the claimed function in order to qualify as corresponding structure is the *quid pro quo* for the convenience of employing [35 U.S.C. 112\(f\)](#) or [pre-AIA 35 U.S.C. 112](#), sixth paragraph, and is also supported by the requirement of [35 U.S.C. 112\(b\)](#) or [pre-AIA 35 U.S.C. 112](#), second paragraph, that an invention must be particularly pointed out and distinctly claimed. See *Medical Instrumentation & Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1211, 68 USPQ2d 1263, 1268. For a means- (or step-) plus- function claim limitation that invokes [35 U.S.C. 112\(f\)](#) or [pre-AIA 35 U.S.C. 112](#), sixth paragraph, a rejection under [35 U.S.C. 112\(b\)](#) or [pre-AIA 35 U.S.C. 112](#), second paragraph, is appropriate if one of ordinary skill in the art cannot identify what structure, material, or acts disclosed in the written description of the specification perform the claimed function.

III. DETERMINING 35 U.S.C. 112(b) or Pre-AIA 35 U.S.C. 112 SIXTH PARAGRAPH COMPLIANCE WHEN 35 U.S.C. 112(f) or Pre-AIA 35 U.S.C. 112 SIXTH PARAGRAPH IS INVOKED

Once the examiner determines that a claim limitation is a means-plus-function limitation invoking [35 U.S.C. 112\(f\)](#) or [pre-AIA 35 U.S.C. 112](#), sixth paragraph, the examiner should determine the claimed function and then review the written description of the specification to determine whether the corresponding structure, material, or acts that perform the claimed function are disclosed. Note that drawings may provide a written description of an invention as required by [35 U.S.C. 112](#). See *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1565, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991). The corresponding structure, material, or acts may be disclosed in the original drawings, figures, tables, or sequence listing. However, the corresponding structure, material, or acts cannot include any structure, material, or acts disclosed only in the material incorporated by reference or a prior art reference. See *Pressure Prods. Med. Supplies, Inc. v. Greatbatch Ltd.*, 599 F.3d 1308, 1317, 94 USPQ2d 1261, 1267 (Fed. Cir. 2010) (stating, "[s]imply mentioning prior art references in a patent does not suffice as a specification description to give the patentee outright claim to all of the structures disclosed in those references."); *Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1381, 53 USPQ2d 1225, 1230 (Fed. Cir. 1999). The disclosure must be reviewed from the point of view of one skilled in the relevant art to determine whether that person would understand the written description to disclose the corresponding structure, material, or acts. *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1338, 88 USPQ2d 1865, 1879 (Fed. Cir. 2008); *Med. Instrumentation & Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1211-12, 68 USPQ2d 1263, 1269 (Fed. Cir. 2003). To satisfy the definiteness requirement under [35 U.S.C. 112\(b\)](#) or [35 U.S.C. 112](#), second paragraph, the written description must clearly link or associate the corresponding structure, material, or acts to the claimed function. *Telcordia Techs., Inc. v. Cisco Systems, Inc.*, 612 F.3d 1365, 1376, 95 USPQ2d 1673, 1682 (Fed. Cir. 2010). A rejection under [35 U.S.C. 112\(b\)](#) or [pre-AIA 35 U.S.C. 112](#), second paragraph is

("for example," "such as")
• 2173.05(e)-Lack of Antecedent Basis
• 2173.05(f)-Reference to Limitations in Another Claim
• 2173.05(g)-Functional Limitations
• 2173.05(h)-Alternative Limitations
• 2173.05(i)-Negative Limitations
• 2173.05(j)-Old Combination
• 2173.05(k)-Aggregation
• 2173.05(l)-[Reserved]
• 2173.05(m)-Prolix
• 2173.05(n)-Multiplicity
• 2173.05(o)-Double Inclusion
• 2173.05(p)-Claim Directed to Product-By-Process or Product and Process
• 2173.05(q)-"Use" Claims
• 2173.05(r)-Omnibus Claim
• 2173.05(s)-Reference to Figures or Tables
• 2173.05(t)-Chemical Formula
• 2173.05(u)-Trademarks or Trade Names in a Claim
• 2173.05(v)-Mere Function of Machine
• 2173.06-Practice Compact Prosecution
2174-Relationship Between the Requirements of 35 U.S.C. 112(a) and (b) or Pre-AIA 35 U.S.C. 112, First and Second Paragraphs
2175-Form Paragraphs for Use in Rejections Under 35 U.S.C. 112(b) or Pre-AIA 35 U.S.C. 112, Second Paragraph
2176-2180-[Reserved]
2181-Identifying and Interpreting a 35 U.S.C. 112(f) or Pre-AIA 35 U.S.C. 112, Sixth Paragraph Limitation
2182-Search and Identification of the Prior Art
2183-Making a Prima Facie Case of Equivalence
2184-Determining Whether an Applicant Has Met the Burden of Proving Nonequivalence After a Prima Facie Case Is Made
2185-Related Issues Under 35 U.S.C. 112(a) or (b) and Pre-AIA 35 U.S.C. 112, First or Second Paragraphs
2186-Relationship to the Doctrine of Equivalents
2187-Form Paragraphs for Use Relating to 35 U.S.C. 112(f) or Pre-AIA 35 U.S.C. 112, Sixth Paragraph
2188-2189-[Reserved]
2190-Prosecution Laches and Res Judicata

appropriate if the written description fails to link or associate the disclosed structure, material, or acts to the claimed function, or if there is no disclosure (or insufficient disclosure) of structure, material, or acts for performing the claimed function. *Donaldson*, 16 F.3d at 1195, 29 USPQ2d at 1850. A bare statement that known techniques or methods can be used would not be a sufficient disclosure to support a means-plus-function limitation. *Biomedino, LLC v. Waters Techs. Corp.*, 490 F.3d 946, 953, 83 USPQ2d 1118, 1123 (Fed. Cir. 2007).

A rejection under **35 U.S.C. 112(b)** or **pre-AIA 35 U.S.C. 112**, second paragraph may be appropriate in the following situations when examining means-plus-function claim limitations under **35 U.S.C. 112(f)** or **pre-AIA 35 U.S.C. 112**, sixth paragraph:

- (1) when it is unclear whether a claim limitation invokes **35 U.S.C. 112(f)** or **pre-AIA 35 U.S.C. 112**, sixth paragraph;
- (2) when **35 U.S.C. 112(f)** or **pre-AIA 35 U.S.C. 112**, sixth paragraph is invoked and there is no disclosure or there is insufficient disclosure of structure, material, or acts for performing the claimed function; and/or
- (3) when **35 U.S.C. 112(f)** or **pre-AIA 35 U.S.C. 112**, sixth paragraph is invoked and the supporting disclosure fails to clearly link or associate the disclosed structure, material, or acts to the claimed function.

A claim may be indefinite when the 3-prong analysis for determining whether the claim limitation should be interpreted under **35 U.S.C. 112(f)** is inconclusive because of ambiguous words in the claim. After taking into consideration the language in the claims, the specification, and how those of ordinary skill in the art would understand the language in the claims in light of the disclosure, the examiner should make a determination regarding whether the words in the claim recite sufficiently definite structure that performs the claimed function. If the applicant disagrees with the examiner's interpretation of the claim limitation, the applicant has the opportunity during the examination process to present arguments, and amend the claim if needed, to clarify whether **35 U.S.C. 112(f)** applies.

When the examiner cannot identify the corresponding structure, material, or acts, a rejection under **35 U.S.C. 112(b)** or **pre-AIA 35 U.S.C. 112**, second paragraph should be made. In some cases, a requirement for information under **37 CFR 1.105** may be made to require the identification of the corresponding structure, material, or acts. See **MPEP § 704.11(a)**. Example R. If a requirement for information under **37 CFR 1.105** is made and the applicant states that the applicant lacks such information or the reply does not identify the corresponding structure, material, or acts, a rejection under **35 U.S.C. 112(b)** or **pre-AIA 35 U.S.C. 112**, second paragraph should be made. For more information, see **MPEP § 704.12** ("Replies to requirements for information must be complete and filed within the time period set including any extensions. Failure to reply within the time period set will result in the abandonment of the application.").

If the written description sets forth the corresponding structure, material, or acts in compliance with **35 U.S.C. 112(b)** or **pre-AIA 35 U.S.C. 112**, second paragraph, the claim limitation must "be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." **35 U.S.C. 112(f)** or **pre-AIA 35 U.S.C. 112**, sixth paragraph. However, functional limitations that are not recited in the claim, or structural limitations from the written description that are unnecessary to perform the claimed function, cannot be imported into the claim. *Welker Bearing*, 550 F.3d at 1097, 89 USPQ2d at 1294; *Wenger Mfg., Inc. v. Coating Mach. Sys., Inc.*, 239 F.3d 1225, 1233, 57 USPQ2d 1679, 1685 (Fed. Cir. 2001).

The following guidance is provided to determine whether applicant has complied with the requirements of **35 U.S.C. 112(b)** or **pre-AIA 35 U.S.C. 112**, second paragraph, when **35 U.S.C. 112(f)** or **pre-AIA 35 U.S.C. 112**, sixth paragraph, is invoked:

(A) If the corresponding structure, material or acts are described in the specification in specific terms (e.g., an emitter-coupled voltage comparator), are linked to or associated with the claimed function and one skilled in the art could identify the structure, material or acts from that description as being adequate to perform the claimed function, then the requirements of **35 U.S.C. 112(b)** and (f) or **pre-AIA 35 U.S.C. 112**, second and sixth paragraphs and are satisfied. See *Atmel*, 198 F.3d at 1382, 53 USPQ2d 1231.

(B) If the corresponding structure, material or acts are described in the specification in broad generic terms and the specific details of which are incorporated by reference to another document (e.g., attachment means disclosed in U.S. Patent No. X, which is hereby incorporated by reference, or a comparator as disclosed in the Y article, which is hereby incorporated by reference), Office personnel must review the description in the specification, without relying on any material from the incorporated document, and apply the "one skilled in the art" analysis to determine whether one skilled in the art could identify the corresponding structure (or material or acts) for performing the recited function to satisfy the definiteness requirement of **35 U.S.C. 112(b)** or **pre-AIA 35 U.S.C. 112**, second paragraph. See *Default Proof Credit Card System, Inc. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291, 75 USPQ2d 1116 (Fed. Cir. 2005) ("The inquiry under [35 U.S.C.] § 112, ¶ 2, does not turn on whether a patentee has 'incorporated by reference' material into the specification relating to structure, but instead asks first 'whether structure is described in the specification, and, if so, whether one skilled in the art would identify the structure from that description.'").

(1) If one skilled in the art would be able to identify the structure, material or acts from the description in the specification for performing the recited function, then the requirements of **35 U.S.C. 112(b)** or **pre-AIA 35 U.S.C. 112**, second paragraph, are satisfied. See *Atmel Corp.* 198 F.3d at 1379, 53 USPQ2d at 1228 (stating that the "one skilled in the art" analysis should apply in determining whether sufficient structure has been disclosed to support a means-plus-function limitation). See also *Dassel*, 115 F.3d at 946-47, 42 USPQ2d at 1885 (The function recited in the means-plus-function limitation involved "reconstructing" data. The issue was whether the structure underlying this "reconstructing" function was adequately described in the written description to satisfy **35 U.S.C. 112(b)** or **pre-AIA 35 U.S.C. 112**, second paragraph. The court stated that "[n]either the written description nor the claims uses the magic word 'computer,' nor do they quote computer code that may be used in the invention. Nevertheless, when the written description is combined with claims 8 and 9, the disclosure satisfies the requirements of **Section 112**, Para. 2." The court concluded that based on the specific facts of the case, one skilled in the art would recognize the structure for performing the "reconstructing" function since "a unit which receives digital data, performs complex mathematical computations and outputs the results to a display must be implemented by or on a general or special purpose computer.").

(2) If one skilled in the art would not be able to identify the structure, material or acts from description in the specification for performing the recited function, then applicant will be required to amend the specification to contain the material incorporated by reference, including the clear link or associated structure, material or acts to

the function recited in the claim. See **37 CFR 1.57(d)(3)**. Applicant should not be required to insert all of the subject matter described in the entire referenced document into the specification. To maintain a concise specification, applicant should only include the relevant portions of the referenced document that correspond to the means- (or step-) plus-function limitation.

IV. DETERMINING WHETHER 35 U.S.C. 112(a) or Pre-AIA 35 U.S.C. 112, FIRST PARAGRAPH SUPPORT EXISTS

A means- (or step-) plus-function limitation that is found to be indefinite under **35 U.S.C. 112(b)** based on failure of the specification to disclose corresponding structure, material or act that performs the entire claimed function also lacks adequate written description and may not be sufficiently enabled to support the full scope of the claim. The principal function of claims is to provide notice of the boundaries of the right to exclude by defining the limits of the invention, and means-plus-function claims rely on the disclosure to define those limits. Accordingly, an inadequate disclosure may give rise to both an indefiniteness rejection for a means-plus-function limitation and a failure to satisfy the written description and enablement requirements of **section 112(a)** or **pre-AIA section 112**, first paragraph.

When a claim containing a computer-implemented **35 U.S.C. 112(f)** claim limitation is found to be indefinite under **35 U.S.C. 112(b)** for failure to disclose sufficient corresponding structure (e.g., the computer and the algorithm) in the specification that performs the entire claimed function, it will also lack written description under **section 112(a)**. See **MPEP § 2163.03**, subsection VI. Examiners should further consider whether the disclosure contains sufficient information regarding the subject matter of the claims as to enable one skilled in the pertinent art to make and use the full scope of the claimed invention in compliance with the enablement requirement of **section 112(a)**. See **MPEP § 2161.01**, subsection III, and **MPEP § 2164.08**.

The Federal Circuit has recognized the problem of providing a sufficient disclosure for functional claiming, particularly with generic claim language, explaining that "The problem is especially acute with genus claims that use functional language to define the boundaries of a claimed genus. In such a case, the functional claim may simply claim a desired result, and may do so without describing species that achieve that result. But the specification must demonstrate that the applicant has made a generic invention that achieves the claimed result and do so by showing that the applicant has invented species sufficient to support a claim to the functionally-defined genus." *Ariad Pharmaceuticals Inc. v. Eli & Lilly Co.*, 598 F.3d 1336, 1349, 94 USPQ2d 1161, 1171 (Fed. Cir. 2010) (*en banc*).

Thus, the means- (or step-) plus- function claim must still be analyzed to determine whether there exists corresponding adequate support for such claim limitation under **35 U.S.C. 112(a)** or **pre-AIA 35 U.S.C. 112**, first paragraph. In considering whether there is **35 U.S.C. 112(a)** or **pre-AIA 35 U.S.C. 112**, first paragraph support for the claim limitation, the examiner must consider whether the specification describes the claimed invention in sufficient detail to establish that the inventor or joint inventor(s) had possession of the claimed invention as of the application's filing date. Additionally, any analysis of whether a particular claim is supported by the disclosure in an application requires a determination of whether that disclosure, when filed, contained sufficient information regarding the subject matter of the claim as to enable one skilled in the pertinent art to make and use the claimed invention. This enablement requirement of **35 U.S.C. 112(a)** is separate and distinct from the written description requirement. *Ariad*, 598 F.3d at 1341. The enablement requirement serves a different purpose than the written description requirement in that it ensures that the invention is communicated to the interested public in a meaningful way. See **MPEP § 2164**. In considering whether there is 35 U.S.C. 112 para. 1 support for the claim limitation, the examiner must consider not only the original disclosure contained in the summary and detailed description of the invention portions of the specification, but also the original claims, abstract, and drawings. See *In re Mott*, 539 F.2d 1291, 1299, 190 USPQ 536, 542-43 (CCPA 1976) (claims); *In re Anderson*, 471 F.2d 1237, 1240, 176 USPQ 331, 333 (CCPA 1973) (claims); *Hill-Rom Co. v. Kinetic Concepts, Inc.*, 209 F.3d 1337, 54 USPQ2d 1437 (Fed. Cir. 2000) (unpublished) (abstract); *In re Armbruster*, 512 F.2d 676, 678-79, 185 USPQ 152, 153-54 (CCPA 1975) (abstract); *Anderson*, 471 F.2d at 1240, 176 USPQ at 333 (abstract); *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1564, 19 USPQ2d 1111, 1117 (drawings); *In re Wolfensperger*, 302 F.2d 950, 955-57, 133 USPQ 537, 541- 43 (CCPA 1962) (drawings).

Merely restating a function associated with a means-plus-function limitation is insufficient to provide the corresponding structure for definiteness. See, e.g., *Noah*, 675 F.3d at 1317, 102 USPQ2d at 1419; *Blackboard*, 574 F.3d at 1384; *Aristocrat*, 521 F.3d at 1334, 86 USPQ2d at 1239. It follows therefore that such a mere restatement of function in the specification without more description of the means that accomplish the function would also likely fail to provide adequate written description under **section 112(a)** or **pre-AIA section 112**, first paragraph.

37 CFR 1.75(d)(1) provides, in part, that "the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description." In the situation in which the written description only implicitly or inherently sets forth the structure, materials, or acts corresponding to a means- (or step-) plus-function, and the examiner concludes that one skilled in the art would recognize what structure, materials, or acts perform the function recited in a means- (or step-) plus-function, the examiner should either: (A) have the applicant clarify the record by amending the written description such that it expressly recites what structure, materials, or acts perform the function recited in the claim element; or (B) state on the record what structure, materials, or acts perform the function recited in the means- (or step-) plus-function limitation. Even if the disclosure implicitly sets forth the structure, materials, or acts corresponding to a means- (or step-) plus-function claim element in compliance with **35 U.S.C. 112(a)** and **(b)** or **pre-AIA 35 U.S.C. 112**, first and second paragraphs, the USPTO may still require the applicant to amend the specification pursuant to **37 CFR 1.75(d)** and **MPEP § 608.01(o)** to explicitly state, with reference to the terms and phrases of the claim element, what structure, materials, or acts perform the function recited in the claim element in a manner that does not add prohibited new matter to the specification. See **35 U.S.C. 112(f)** or **pre-AIA 35 U.S.C. 112**, sixth paragraph ("An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." (emphasis added)); see also *B. Braun Medical*, 124 F.3d at 1424, 43 USPQ2d at 1900 (holding that "pursuant to this provision [**35 U.S.C. 112**, sixth paragraph], structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim. This duty to link or associate structure to function is the *quid pro quo* for the convenience of employing **112**, paragraph 6."); *Medical Instrumentation and Diagnostic Corp. v. Elekta AB*, 344 F.3d 1205, 1218, 68 USPQ2d 1263, 1268 (Fed. Cir. 2003) (Although one of skill in the art would have been able to write a software program for digital to digital

conversion, such software did not fall within the scope of "means for converting" images as claimed because nothing in the specification or prosecution history clearly linked or associated such software with the function of converting images into a selected format.); *Wolfensperger*, 302 F.2d at 955, 133 USPQ at 542 (just because the disclosure provides support for a claim element does not mean that the USPTO cannot enforce its requirement that the terms and phrases used in the claims find clear support or antecedent basis in the written description).

V. SINGLE MEANS CLAIMS

A single means claim is a claim that recites a means-plus-function limitation as the only limitation of a claim. **35 U.S.C. 112(f)** or **pre-AIA 35 U.S.C. 112**, sixth paragraph, by its terms is limited to "an element in a claim for a combination." Therefore, single means claims that do not recite a combination cannot invoke **section 112(f)** or **pre-AIA section 112**, sixth paragraph. As such, they are not limited to the structure, material or act disclosed in the specification that performs the claimed function. Thus, a single means limitation that is properly construed will cover all means of performing the claimed function. The long-recognized problem with a single means claim is that it covers every conceivable means for achieving the stated result, while the specification discloses at most only those means known to the inventor. *In re Hyatt*, 708 F.2d 712, 218 USPQ 195 (Fed. Cir. 1983). A claim of such breadth reads on subject matter that is not enabled by the specification, and therefore, should be rejected under **section 112(a)** or **pre-AIA section 112**, first paragraph. See also **MPEP § 2164.08(a)**.

It is important to distinguish between claims that recite multiple functional limitations (a common practice particularly in the computer-related arts) and claims that recite a single element in means-plus-function terms (rare in most arts). In computer-implemented inventions, a microprocessor may be programmed with different algorithms, with each algorithm performing a separate function. Each of these separately programmed functions should be interpreted as a separate element.

Applicants frequently draft claims to computer-related inventions using a shorthand drafting technique that recites a generic placeholder, such as a "system", that performs a series of functions. This shorthand drafting technique does not avoid invoking **35 U.S.C. 112(f)** or **pre-AIA section 112**, sixth paragraph. See **MPEP § 2181**, subsection II.B. Each function recited in this manner should be interpreted as a separate **section 112(f)** or **pre-AIA section 112**, sixth paragraph limitation.

For example, consider the following claim:

9. An image processing assembly that filters pixel values, comprising:

a system configured to:

extract a first pixel value; and

compare the first pixel value to a pixel threshold to filter pixel values that exceed the threshold value.

Assume the specification that supports this claim discloses that the system is a microprocessor programmed with two separate algorithms, one for performing the extraction and another for comparing the pixel values. A proper interpretation would treat these elements as separate limitations each of which invoke treatment under **section 112(f)** or **pre-AIA section 112**, sixth paragraph since the word "system" has no structural meaning and in this case is serving as a generic placeholder for "means".

The claim elements under **35 U.S.C. 112(f)** or **pre-AIA section 112**, sixth paragraph would be interpreted as:

system configured to extract a first pixel value; and

system configured to compare the first pixel value to a pixel threshold to filter pixel values that exceed the threshold value.

This claim would not be considered a "single means" claim.

Compare this type of claim to the claim in *Hyatt* that was found to recite only a single element, which is drafted in "means-plus-function" format but fails to be in a combination.

35. A Fourier transform processor for generating Fourier transformed incremental output signals in response to incremental input signals, said Fourier transform processor comprising incremental means for incrementally generating the Fourier transformed incremental output signals in response to the incremental input signals.

In re Hyatt, 708 F.2d 712, 714-715, 218 USPQ 195, 197 (Fed. Cir. 1983) (A single means claim which covered every conceivable means for achieving the stated purpose was held nonenabling for the scope of the claim because the specification disclosed at most only those means known to the inventor.)

VI. ENSURE THAT THE RECORD IS CLEAR

When an examiner interprets a claim limitation under the provisions of **35 U.S.C. 112(f)** or **pre-AIA 35 U.S.C. 112**, sixth paragraph, the Office action should specify that the examiner has done so. A claim limitation is presumed to invoke **35 U.S.C. 112(f)** when it explicitly uses the term "means" and includes functional language without corresponding structure recited in the claim. When the examiner has determined that **35 U.S.C. 112(f)** applies, the examiner should also specify what the specification identifies as the corresponding structure. If the corresponding structure for the claimed function is not clearly identifiable in the specification, the Office action should, nevertheless, attempt to identify what structure is most closely associated with the means- (or step-) plus-function limitation to facilitate a prior art search. This is especially true when there may be confusion as to which disclosed implementation of the invention supports the limitation, as explained in subsection II.B., above. By contrast, a claim limitation that does not use the term "means" will trigger the presumption that **35 U.S.C. 112(f)** does not apply.

When **35 U.S.C. 112(f)** issues are raised the two rebuttable presumptions regarding the application of **35 U.S.C. 112(f)**

should be established in the prosecution record. Examiners should apply the applicable presumption and the 3-prong analysis to interpret a functional claim limitation in accordance with [35 U.S.C. 112\(f\)](#) including determining if the claim sets forth sufficient structure for performing the recited function. A determination that a claim is being interpreted according to [35 U.S.C. 112\(f\)](#) should be expressly stated in the Office action. By this, the applicant and the public are notified as to the claim construction used by the examiner during prosecution. Also, if the applicant intends a different claim construction, the issue can be clarified early in prosecution. In response to the Office action that determined [35 U.S.C. 112\(f\)](#) was invoked, if applicant does not want to have the claim limitation interpreted under [35 U.S.C. 112\(f\)](#) applicant may: (1) present a sufficient showing to establish that the claim limitation recites sufficient structure to perform the claimed function so as to avoid interpretation under [35 U.S.C. 112\(f\)](#); or (2) amend the claim limitation in a way that avoids interpretation under [35 U.S.C. 112\(f\)](#) (e.g., by reciting sufficient structure to perform the claimed function).

See [MPEP § 2187](#) for applicable form paragraphs.

When allowing a claim that was treated under [35 U.S.C. 112\(f\)](#) the examiner should indicate that the claim was interpreted under the provisions of [35 U.S.C. 112\(f\)](#) in reasons for allowance if such an explanation has not previously been made of record. As noted above, the indication should also clarify the associated structure if not readily apparent in the specification.

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